PSYCHOLOGICAL PREDICTORS OF PERFORMANCE OF TRACK AND FIELD ATHLETES IN DELHI-NCR REGION

SHORT SYNOPSIS

Submitted in partial fulfillment of the requirement of the degree of

DOCTOR OF PHILOSOPHY

to

Manav Rachna International Institute of Research and Studies
(Deemed to be University)

by

Kashish Pandey
Registration number: 21/Ph.D./099

Under the supervision of
Dr. Khusboo
Assistant Professor, Faculty of Behavioural and Social Sciences

FACULTY OF BEHAVIOURAL AND SOCIAL SCIENCES

MANAV RACHNA INTERNATIONAL INSTITUTE OF RESEARCH & STUDIES

SECTOR-43, SURAJKUND –DELHI ROAD, FARIDABAD – 121001

Abstract

Background and Rationale: Burgeoning research has shed light on the non-cognitive mechanisms which have played an indispensable role in determining superior athletic performance. However, there has been a gap identifying the impact of certain psychological variables on performance. Hence, sport is the domain where the need to explore metacognition, grit, self-efficacy, social and parental support becomes eminent for improving performance among athletes. Hence, this study intends to fill the research gap by advocating the implications of these constructs in sport settings within Indian context.

Objectives: This research aims to discern metacognition, grit, social support and self-efficacy on performance among track and field athletes. For analyses, latest version of SPSS shall be availed.

Hypothesis: It was hypothesized that metacognition, grit, social support and self-efficacy will impact performance which will be tested via survey approach.

Methodology: Mixed method research will be utilized incorporating quantitative and qualitative approach with sample size of 400 approx. athletes and 6 approx. cases for interpretative phenomenological analysis (IPA). For this purpose, correlational design and semi-structured interviews were conducted.

Implications: Analysis will help in advocating the importance of psychological variables influencing performance which can help athletes in meeting their goals.

Key words: *Metacognition, Grit, Social Support, Self-efficacy, Performance, Athletes*

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Certificate

I hereby declare that the short synopsis "Psychological Predictors of Performance of Track and Field Athletes in Delhi-NCR region" being submitted in partial fulfillment of the requirement for the degree of Doctor of Philosophy in Applied Psychology under faculty ofBehaviouraland Social Sciences of Manav Rachna International Institute of Research & Studies, Faridabad during the academic year 2021-2022.

It is a bonafide record of original work carried out under the supervision of Dr. Khusboo and has not been submitted in full or part to any other university or institute for degree or diploma. Further, it is certified that short synopsis is plagiarism free and proof has been submitted.

Kashish Pandey
21/Ph.D./099

Dr. Khusboo
Assistant Professor
Faculty of Behavioural and Social Sciences
MRIIRS
(Supervisor)

(Chairman, DRC) 19/04/23

Introduction

1.1 Sports and Performance

"*Performance can be publicly observed and even objectively measured in open competition and public performances*" (Erricsson, 2009, p.18)." The expert or novice performers have to execute their task under complex environment (Baker & young, 2014). Performance of an athlete can be determined by sleep, nutrition, recovery and other blend of factors (Kirschen et al., 2020). In order to effectuate athletic reputation, finance, ranking, performance, athletes have to persevere and sustain for longer period of time in order to achieve (Weinberg, 1994). Mental strength, regulation, awareness, self-talk are other key factors which can be instilled through sport psychology interventions (Church, Rumbold & Sandars, 2017; Brown & Fletcher, 2017). Predictably, there is lack of mental health awareness among athletes as they try to "push through" these issues just like their physical workout (Putukian, 2016; Tripathi, 2016). These stressors can affect the mental health which leads to low performance and performance dissatisfaction (Mehrad, 2017). Track and field sport is an umbrella term for athletics which comprises of different events such as 100m, 400m, pole-vault etc. Be it any sport, performance is the end goal for any athlete to achieve athletic ranking, sponsors and financial benefits.

1.2 Metacognition in sports

Metacognition can be defined as when an individual can think about his/her own thinking (Flavell, 1979). Focus and concentration are considered to be the pre-requisite for achieving successful performance (Moran, 2011; Moran, 1996). Athletes are required to focus on task at hand while keeping distractions aside (Oliver, McCarthy & Burns, 2020; Love, Kannis-Dymand & Lovell, 2021; MacIntyre, Igou, Campbell, Moran & Matthews 2014; Dail, 2014; Arslan, Akin & Citemel, 2013; Rahmanian & VaezMousavi, 2015; Simon & Bijork, 2001).

This can happen through monitoring of cognition can be achieved through metacognition which also helps in self-regulation (Tarricone, 2011; MacIntyre et al., 2014; Moran, 2011; Nietfield, 2003; Brick et al., 2014; Whitehead et al., 2019; Efklides, 2008; Tarricone, 2011).

1.3 Grit and performance

This term has been pioneered by Duckworth (2007). It has been defined as inclusive of two components which are perseverance of efforts and consistency of interests (Duckworth, 2013). Grit can not be inherited rather it can be learned through growth mindset (Duckworth, 2013). With regard to sport setting, grit is required so an athlete can "stick through" for getting sponsors, medals, reputation, athletic identity and prize money (Jachimowicz, Wihler, Bailey & Galinsky, 2018; Kelly, Matthews & Bartone, 2014; Tamminen, Sabiston & Crocker, 2017). Ostensibly, due to uncertainties such as due to Covid-19 pandemic, the competition can get adjourned (Grix et al., 2021). Therefore, the ability to sustain and keep inclination towards passion for sport for longer period of time does not come easily. (Grit: The Power of Passion and Perseverance, Angela Lee Duckworth - YouTube, n.d.)

1.4 Social support and Self-efficacy in sports

Social support can be stated as "*an exchange of resources between at least two individuals perceived by the provider or recipient to be intended to enhance the wellbeing of the recipient*" (Shaumaker & Brownell, 1984, p.13). Sources for social support can be parents, teachers or peers. Athletes' performance, motivation can be affected by social support (Bianco & Eklund, 2001; Holt & Hoar, 2006; Rees, 2007; Zimet, 1988). Mental fatigue can be diminished through social support among athletes (Zhang & Zhi, 2018).

Apparently, highly competitive environment takes a toll in an athlete's life however social support act as a stress buffer. To exemplify, social support is seen as a moderator of distress among injured athletes (Covassion et al., 2014; Freeman, Coffee, & Rees, 2011; Maddison & Prapavessis, 2005; Yang et al., 2010). Female soccer players have succumbed to social support as their coping strategy (Holt & Hogg, 2002). Elite track and field runners have reported increased stress while performing when there was no social support (McKay et al., 2008). Perceived social support is positively linked to better performance among elite golfers (Freeman & Rees, 2009).

Bandura, (1977) defined self-efficacy as the individual belief of his/her own effectiveness. With regard to sport setting, it can be stated as an athlete's ability to effectuate the benchmark only when an athlete has a belief to achieve it. In order to explore self-efficacy, various moderators have been used by researchers with regard to sport setting (Durovic, Popov, Soki, et al., 2021; Moritz, Feltz, Fahrbach & Mack, 2000). Generally, self-efficacy can be determined through verbal persuasion, performance, vicarious experiences and physiological states which predicts specific self-efficacy also (Bandura, 1977; Chen, Gully, & Eden, 2001). Various factors such as metacognition can affect self-efficacy and others like social media among athletes do not affect the former (Weber, Olsen & Martiny, 2022; Rogowska, Tataruch, Niedzwiecki, et al., 2022). Self-efficacy also differs depending on sex, age, skills of an athlete, or absence of practice among athletes (Romero, Garrido-Guzman, Vazquez, 2022). According to Moritz, Feltz, Fahrbach, & Mach (2000) self-efficacy and performance are positively related with positive moderate correlation of (.38).

Literature Review

Fink (2013) stated, “literature review as a systematic, explicit and reproductible method for identifying and evaluating the recorded work of researchers and practitioners. (pp.3-5)”. This present section of the study harps on the previous literature on the present research area for identifying the research gaps.

2.1 Metacognition and Performance

Oliver, McCarthy and Burns (2020) discussed the void of cognitive processes which underlie meta-attention. This study has been conducted to understand meta-attention which is one of the components of metacognition in sport settings. The reasons for understanding the same lie in improving the performance in physical domain. The study was conducted among elite golfers. Understanding the cognitive processes would enable the golfers to attend the stimuli and discard irrelevant ones.

Baspinar and Ziyagil (2019) gave an insight about how metacognition had been explicitly present in non-athletes as compared to athletes. This can be justified as metacognition has its origin in education sector. However, for athletes there has been a gap in producing the metacognitive skills. The authors of this study did research on 434 male and 493 female university students. Female had better insight about their metacognitive skills as compared to male counterparts.

Love, Kannis-Dymand and Lovell (2018) encapsulated the role of metacognitive beliefs plays an important role prior to the competition. They examined metacognition with relative to concentration as well. Overall, they defended the further need for research of cognition-motion in the area of sports.

Augustyn and Rosenbaum (2005) had probed the investigation into metacognition for action. According to the researchers, metacognition had been widely investigated in the domain of intellectual skills. However, to understand its application in the area of motor

domain they developed a task. The participants in the task had to choose cursor position to fixed targets. It was time-bounded. The rationale was that participants would act according to Fitts's law. This study suggested that metacognition applied not only to intellectual skills but also motor skills.

2.2 Grit and Performance

Sigmundsson, Gudnason and Johannsdottir (2021) explored gender differences in grit and passion in large sample size. 917 participants were taken from the ages 14-77. The sample was divided among adolescents, young adults and older adults. Adolescents were from 14-19 (N=141) where as young and older adults were from 20 to 77 years (N=776). It was revealed that males were significantly high in grit and passion as compared to females' counterparts. The justification was given in relation to high dopamine levels in males.

Lonel, Ion and Visu-Petra (2021) explored grit on climbing performance over and beyond the five-factor model (FFM). The research was conducted on 272 sport climbers, 155 boulderers with ages between 16 and 69. The researchers of this study were intrigued to find that grit could predict high novel-based sport such as rock climbing. Also, predictably, grit is indistinct from conscientiousness. According to them, grit could also predict climbing performance over FFM traits. Their research encapsulated the power of grit in sport settings.

Cormier et al. (2021) recapitulated the scoping review of grit in sport domain. The researchers used various strategies to identify ninety publications. Researchers approached six collegiate level coaches to understand the effects of grit among athletes. The results allowed to understand the ameliorating effects of grit. An athlete can suffer from slumps in performance, breakdowns, injury etc. Grit can help an athlete to maintain the perseverance by sticking through the goals assiduously.

Nicholls, Polman and Levy (2012) explored the role of performance among athletes. The researchers also examined coping, emotions among athletes. Total 557 athletes were recruited whose age were between 18 and 64 years. Path analysis model was conducted to explore the constructs. The design was cross-sectional. The results concluded that emotions,

coping style were associated with performance satisfaction. Those athletes who used task-oriented coping, they were more likely to be satisfied with their performance. It was also positively related to superior subjective performance.

2.3 Social support and self-efficacy

Hartley, Coffee and Abhyankar (2022) conducted a study among athletes where in it was found the social support acted as a buffer against stress among athletes. The negative, positive effects of social support were dependent on type and nature of social support given to the athletes which can be from peers, family and friends.

Sheridan, Coffee and Lavalee (2022) analyzed the role of social support among youths in sports. The systematic review was conducted from 1993 to 2013. 73 studies had been evaluated and divided into different themes. For athletes, coaches were identified as main source for the support. Parents and peers also played the significant role among athletes.

Horcajo, Santos & Higuero (2022) analyzed the role of self-efficacy on performance with both higher and lower metacognitive certainty. It was found that self-efficacy had greater impact on physical performance. This explains self-efficacy plays an integral role for an athlete to achieve optimal level of performance. Also, metacognitive certainty can be increased by working on self-efficacy among budding and elite athletes.

Sapieja, Dunn and Holt (2011) examined the role of parenting styles with regard to perfectionism among athletes. Total 194 male youth soccer players had been taken for the consideration as the part of the sample size. Cluster analysis had been conducted post collection of the sample. The higher scores on the parental style scale revealed the nature of higher parental authoritativeness as perceived by the athletes. It has been found that authoritative parenting has linked to high or low perfectionism among athletes.

Rees, Mitchell, Evans, et al., (2010) elucidated the buffering role of social support and psychological responses towards injury. It was found through moderated hierarchical

regression social support seems to differ among different athletes depending on their type of performance. Performance standard also matters.

Research Gaps

There had been gap in literature in understanding cognitive-motion nexus among track and field athletes in Indian context (Stanley & Krakauer, 2013). In our study, it is prominent to understand if these variables correlate and influences performance among track and field athletes.

Hence, following gaps have been identified:

a. There has been extensive research done on adolescent athletes in western context but dearth of research is conducted on youth and senior level track and field athletes in Indian context.
b. With increase in pressure while playing for the country brings changes in self-efficacy which has not been explored among track and field athletes.
c. Furthermore, with increase in age, degree of quality of social support and assistance gotten from close ones transforms. Not enough Indian studies have focused on the same.
d. There has been lack of qualitative research exploring performance amongst track and field athletes. Also, not enough studies have explored interpretative phenomenological analysis as a method to understand the psychological factors underlying performance among athletes.

Description of the Broad Area and Problem Statement

Sport is bread-winning field where success doesn't come easily. Athletes should have the quest and patience to do so. Constant changing environment with increasing competition in events, sponsors, fame on social media, athletic ranking can make athletes resort to unfair practices such as doping to achieve performance optimum. However, the need for awareness, regulation and monitoring is needed. Also, right from childhood, if autonomy is given to the children for appropriate discipline, then cheating reduces as compared to non-autonomy-based parenting styles which also explains the reasons for doping.

Additionally, alertness, attention, meta-imagery are powerful ways to enhance performance and achieve performance satisfaction. An athlete should be intrinsically motivated and passionate to achieve laurels for the country. Reaching to Olympics or Asian level cannot be accomplished easily. Besides passion, perseverance of efforts is the key. Hence, this can be effectuated through grit. Metacognition, grit along with social support are considered to be relatively interconnected. These constructs can help athletes to tone down the weight of pressure for achieving performance. Without social support and self-efficacy, it is difficult for any athlete to reach to the desired level hence all these variables are explored with respect to performance.

Problem Statement

Conspicuously, the pressure of winning and not whining had made athletes resort to unethical and immoral activities such as doping (Malik & Malik, 2011) or sports corruption (Ghai & Zipp, 2020; Shokri, 2013). This justifies the lack of awareness, lack of monitoring on one's own thoughts, actions and emotions when such practices are adopted by elite athletes. In order to achieve performance benchmark, the social support along with grit, metacognition and self-efficacy plays crucial roles.

Hence, in the present study, we aim to understand the singular and collect influences of these psychological factors on performance. As there has been lack of literature on these constructs in Indian context, therefore present research implications can help identify influences

ascertaining the impact on performance among track and field athletes. Also, quantitative analysis won't be sufficient to understand subjective and in-depth nature of these variables with regard to performance hence conduction of qualitative analysis gives a broader picture. As compared to mono-method studies, the amalgamation of mixed method involves the compensation of losses served by the other method. Therefore, interpretative phenomenological analysis (IPA) has been used to understand the impact of these psychological factors in detail.

Research Objectives

On the basis of the literature review, following objectives have been identified for the present research:

a) To find correlation between grit and performance, metacognition and performance, social support and performance, self-efficacy and performance among track and field athletes.
b) To estimate the impact of grit, metacognition, social support and self-efficacy on performance among track and field athletes.
c) To find significant differences, if any, between youth and senior level athletes' sample with respect to grit, metacognition, need for social support and self-efficacy.

Hypothesis of the Study

a) There would be a significant correlation between grit and performance, metacognition and performance, social support and performance, self-efficacy and performance.
b) There would be a significant impact of metacognition, grit, social support and self-efficacy on performance.
c) There would be a significant difference between youth and senior level athletes with respect to grit.
d) There would be a significant difference between youth and senior level athletes with respect to metacognition.
e) There would be a significant difference between youth and senior level athletes with respect to need of social support.
f) There would be a significant difference between youth and senior level athletes with respect to self-efficacy.

Research Questions for Qualitative Analysis

1. At which age you realized that you were good in track and field sport?
2. Have you tried any sport besides track and field?
3. What made you choose track and field sport in comparison to other sports?
4. What is the need to excel in track and field sport despite of tough competition?
5. Where does motivation for practicing daily comes from?
6. Is there any role model you look up to which gives you inspiration?
7. What is the feeling when you take a start position during your competition?
8. What kind of positive thoughts come to your mind during your competition?
9. What kind of negative thoughts come to your mind during your competition?
10. Share an experience when you imagined yourself doing the drill mentally and what was it like on the field?
11. For instance, you failed in the first attempt of your trial in your game, what is your next step towards improving it?
12. Share your experience of the game you last won.
13. What are the thoughts which comes in your mind when you beat others and achieve performance?
14. Share your experience when you lost in the competition despite of the hard work you did for it.
15. What keeps you going on despite of a loss in the competition?
16. In order to give your best shot, do you use any strategy such as talking to yourself, isolating yourself from others before the game?
17. Outside the field, what kind of necessary support you need in order to achieve your performance?
18. After winning, what made you stay in the track and field sport?
19. After losing, what are the reasons which kept you in track and field sport?
20. What is the feeling when people praise you for performing your best?
21. How do you feel about yourself when people praise you after you have won in the competition?

Research Methodology

5.1 Type of Research

Descriptive and explanatory research method will be used to analyze the relationship between metacognition, grit, social support and self-efficacy on performance among track and field athletes in Delhi-NCR.

5.2 Operational Definition

Psychological Predictors: Predictors are the variables which in present study has been labelled as metacognition, grit, social support, self-efficacy along with performance.

Metacognition: It is an ability to think about one's own thinking (Flavell, 1979).

Grit: It is an ability to be consistent and persevere towards long-term goals (Duckworth, 2007).

Social support: "An exchange of resources between at least two individuals perceived by the provider or recipient to be intended to enhance the wellbeing of the recipient" (Zimet, 1988).

Self-efficacy: It is an ability of an individual to maintain his/her own effectiveness (Bandura, 1977).

Performance: "Performance can be publicly observed and even objectively measured during competitions." (Erricsson, 2009, p.18).

Track and Field athletes: Track and field sport is an umbrella term for track which comprises of running events (e.g., 100m, 1500m etc.) and field which includes jumpers (high jump, pole-vault etc.).

Delhi-NCR: It includes areas covering Delhi, Noida, Gurugram, Faridabad.

Predictor Variables: a) Metacognition, b) Grit, c) Social support, d) Self-efficacy.

Criterion Variable: a) Performance.

5.3 Sample

There are more than 1000 professional athletes over Delhi-NCR across different sports, however due to limitation of resources, bandwidth and time and as per convenient sampling, around 400 approx. sample shall be taken (statistically significant sample at 95% confidence level and 5% error margin). Also, for quantitative portion, (N=400) were from two sample

groups: youth (N=200) and senior level athletes (N=200). For qualitative portion, 3 shall be selected from youth and 3 from senior category. Pilot study shall be done on 100 athletes for quantitative and 2 for qualitative. For the qualitative purposes, interpretative phenomenological analysis (IPA) shall be conducted on 10 athletes (tentatively) depending on the original scores and willingness of the athletes.

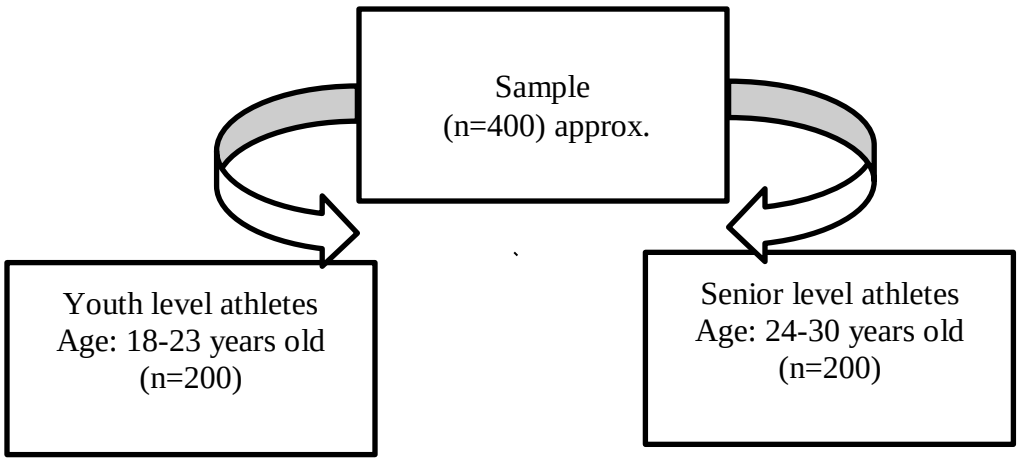

Figure 1. showing sample distribution

5.4 Data Collection

Mixed method design shall be used for data collection. Primary data will be collected through survey method (questionnaire based). Scales will be used to gather responses from athletes at various stadiums and gyms in Delhi-NCR for quantitative approach. For quantitative method, correlation design shall be used whereas for qualitative, interpretative phenomenological analysis will be conducted of the athletes.

5.5 Tools

S no.	Name of the Tool	Author/Year	No. of the items	Reliability and Validity
1.	Metacognition Self-Assessment scale	Pedone et al., (2017)	18	Cronbach alpha: 0.87 Factorial validity: 0.74

	Dimensions: 1) monitoring 2)differentiation 3)integration 4)decentration 5)mastery			
2.	Short Grit scale. Dimensions: 1)consistency of interests 2)perseverance of efforts	Duckworth (2009)	8	Cronbach alpha: 0.73 Factorial validity: 0.73
3.	Multidimensional Scale of Perceived Social Support	Zimet et al., (1988) (Recently used by Phukan, 2022 among athletes)	12	Cronbach alpha: 0.87 Test-retest reliability: 0.73-0.84
4.	Self-Efficacy scale	Singh & Narain (2014)	20	Split half reliability: 0.74 Test re-test reliability: 0.82, concurrent validity-0.92
5.	Athlete's Subjective Performance Scale	Nahum et al., (2016)	6	Cronbach alpha: 0.80 Validity: 0.70

5.6 Procedure

Using survey method, participants will be approached at various stadiums for data collection. Also, the responses shall be taken on voluntary basis. The researcher shall apprise the athletes about the purpose and intention of the study along with key requirements of the eligibility as mentioned in the form. Respondents will be apprised that their responses would be kept confidential. Data collection will take place with the help of self-report measure for the qualitative method as well which includes a semi-structured interview. Interview shall be taken in a semi structured manner. Post data collection, analysis will begin with confirmatory factor analysis. Analysis will require eliminating the outliers based on inclusion and exclusion criteria. Athletes who have been going through any medication shall be exempted. Form of

athletes who have been retired will not be taken into consideration. Also, normality will be checked through Shapiro-Wilk and skewness and kurtosis in order to perform regression analysis.

Inclusion criteria-

- Those who have been in track and field since past 10 years
- Age- 18 – 30 years
- Not suffering from any pathology
- Participation in any event in past 10 years including Grand Pix.

Exclusion criteria-

- Not participated in sports since past 10 years due to injury
- Suffering from any pathology, mental illness.
- Playing at master's level which account for 35 + age.
- Those athletes who have been banned by WADA.

5.7 Statistical Analysis

The data will be collected and left to coding, editing, cleaning and adjusting for the researcher. SPSS latest version shall be used to perform analysis. Descriptive statistics shall be used for collecting, summarizing the data and inferential statistics will be used for parametric techniques such as independent t-test, correlation, multiple regression.

5.8 Limitations

- The geographical location is limited to Delhi-NCR; however, athletes are present in reputed academy such as Patiala, Bangalore, Kerala, Orissa etc. but these locations have not been considered due to time and resources.
- Non-probability method of convenience sampling will be used, which can impact generalizability.

Expected Outcome of the Research

India competes at National, Asian, Diamond League, European League and Olympics. However, in Tokyo 2021 Olympics, only 117 athletes were registered across different sports such as archery, race walking, badminton, boxing, wrestling and others. In athletics which has track and field event, out of which only 26 athletes were enrolled as they qualified the standards and benchmarks. However, there could have been more athletes representing India. Henceforth, pursuing this research will enable the following outcomes:

- Through implications of this research, advocacy of metacognition and grit can enable sport psychologists, coaches understand the nature of these variables. They can also explain the cognition during performance which can help them to reflect and self-monitor.
- Secondly, with awareness of these constructs, athletes can introspect, reflect upon their mistakes and correct them as coach cannot be present with them every time.
- Using and abusing steroids can be diminished as through self-awareness and monitoring, athletes can understand the ethical issues pertaining to it.
- In Paris 2024 games, more Indians can be seen in track and field if practices of awareness, monitoring, empathy, understanding of one own self are encapsulated to athletes.

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PSYCHOLOGICAL PREDICTORS OF PERFORMANCE OF TRACK AND FIELD ATHLETES IN DELHI-NCR REGION

SHORT SYNOPSIS

by

Kashish Pandey
Registration number: 21/Ph.D./099

Under the supervision of
Dr. Khusboo
Assistant Professor, Faculty of Behavioural and Social Sciences

FACULTY OF BEHAVIOURAL AND SOCIAL SCIENCES

MANAV RACHNA INTERNATIONAL INSTITUTE OF RESEARCH & STUDIES

SECTOR-43, SURAJKUND –DELHI ROAD, FARIDABAD – 121001

Abstract

Background and Rationale:Burgeoning research has shed light on the non-cognitive mechanismswhich have played an indispensable role in determining superior athletic performance. However, there has been a gap identifying the impact of certain psychological variables on performance. Hence, sport is the domain where the need to explore metacognition, grit, self-efficacy, social and parental support becomes eminent for improving performance among athletes.Hence, this studyintends tofill the research gap by advocating the implications of these constructs in sport settings within Indian context.

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